

CLAIMS

- 5 1. An electrical generator which includes
- a) an elongated support fixed at one end but free to move or flex
 - b) a coil with electric outputs secured to said elongated support remote from the fixed end
 - 10 c) a magnetic field adjacent the coil such that movement of the coil induces an electric current.
- 15 2. An electrical generator as claimed in claim 1 in which a piezo membrane supports the coil so that the movement of the coil stresses the piezo membranes and generates a voltage.
3. An electrical generator as claimed in claim 1 or 2 in which there are several membranes selected to provide a wider vibrational bandwidth.
- 20 4. An electrical generator as claimed in claim 1 or 2 in which the membrane is L shaped and fixed at the top with the coil mounted on the foot of the L.
5. An electrical generator as claimed in claim 1 in which the magnetic field is provided by permanent magnets which are configured to maximize the magnetic flux in the path of the moving coil.
- 25 6. An electrical generator as defined in claim 1, which incorporates a DC to DC voltage converter and a voltage detector.
- 30 7. A rectification device for a parasitic energy harvester in which vibration or motion induces relative movement between a coil and a magnet to induce an electric current in the coil in which a piezo electric membrane is incorporated into the support for either the magnet and/or the coil so that

the vibration or motion also produces a voltage in the piezoelectric membrane sufficient to power the rectification of the voltage produced by the relative movement between the coil and the magnet.

- 5 8. A motion sensor which includes
- a) A body portion
 - b) an elongated support fixed at one end to said body portion but free to move or flex in response to movement or vibration of said body
 - 10 c) a coil secured to said elongated support remote from the fixed end, said coil having electric outputs
 - d) a magnetic field adjacent the coil such that movement of the coil induces an electric current which is indicative of the degree of motion of the body.
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